NOVEMBER/DECEMBER 2024

CEEL54A/BEEL54A/FEEL54A — MEDICAL ELECTRONICS

Time : Three hours Maximum : 75 marks

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SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are the significant characteristics of an instrumentation amplifier?

2. Define CMRR of an op-amp.

3. What does ERG deal with?

4. Mention the different lead configurations used in ECG.

5. What is the function of a heart lung machine?

6. Define systole.

7. What are hard X-rays? What is their use?

8. Define one rad.

9. What is diathermy?

10. What is meant by fulguration?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Discuss in brief, the requirements for physiological signal amplifiers.

Or

(b) Draw a bridge voltage amplifier and discuss its linearly.

12. (a) Draw a typical Electro cardio gram and explain its different parts.

Or

(b) Discuss the occurrence and frequency range of brain waves.

13. (a) Describe any one method of measuring respiration rate.

Or

(b) Draw the circuit diagram of a digital electronic thermometer and explain its working.

14. (a) Draw an X-ray tube and explain its construction and working.

Or

(b) List the advantages of Laser surgery.

15. (a) Explain microwave diathermy.

Or

(b) Draw the block diagram of ultrasonic diathermy unit and explain its working.

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SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Draw the circuit diagram of an ECG isolation amplifier and explain its action.

17. Draw the block diagram of an EEG unit and explain the different block in it.

18. Explain the principle and working of Electro Magnetic (EM) blood flow meter.

19. Discuss the applications of Lasers in biological medium.

20. Draw the block diagram of an electro surgical diathermy unit and explain its working details. Mention its special features.

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